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Applicant(s):	Beasley, Jr. et al.	
Filed:	September 5, 2003	
Art Unit:	1731	
Examiner:	D. R. Cordray	
Title:	LOW DENSITY PAPERBOARD AND TUBE INCORPORATING THE SAME	

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REPLY BRIEF UNDER 37 CFR § 41.41

This Reply Brief is responsive to the Examiner's Answer mailed on December 7, 2007.

The Examiner's Answer at page 13, section 10, summarily concludes as follows:

> Clapp discloses good formation for multi-layer liner board or paper comprising wood flour or sawdust with particle sizes from about 177 to about 420 μm. McCowan et al discloses that paper made using sawdust that has been screened to a particle size of greater than about 1/16 inch (about 1590 μm) has good strength properties. The prior art paper and paperboard comprising sawdust with particle sizes that include a significant portion of the claimed range as well as both upper and lower endpoints of the range. It would have been obvious to one skilled in the art at the time of the invention to use sawdust having a particle size within the claimed range to obtain good strength or formation properties.

Regarding Clapp, the Examiner implies that Clapp teaches that using sawdust having particles between 177 to about 420 μm in multi-layer linerboard or paper *causes* good formation on a cylindrical mold. Thus, the Examiner concludes that one of skill in the art would be led to use sawdust having such particle sizes if they were concerned with "good formation" in the manufacture of paperboard. Applicants respectfully disagree. Clapp is directed to a process for making "patent coated" linerboard having a "smooth satiny finish." Clapp, page 1, lines 1-15. Clapp discloses that the top layer (i.e., the smooth satiny layer) of its linerboard may be made from "10 parts cellite or kieselguhr, 20 parts of wood flour, and 70 parts of china clay, together

with water to form a suspension." Clapp, page 1, lines 68-72. Clapp discloses that its finely-disintegrated wood flour may be replaced with "finely divided sawdust capable of passing through a 40 to an 80 mesh sieve" and that the resulting product (i.e., the cellite/kieselguhr, sawdust, china clay slurry) has the property of "forming" on a cylindrical mold; however, Clapp further states that this sawdust-containing product is "not quite as satisfactory" as when wood flour is used. Clapp, page 2, lines 70-79. An objective reading of Clapp makes clear that the cellite/kieselguhr, sawdust, china clay slurry "forms" on the cylindrical mold *despite* the presence of the coarse sawdust and not because of it. Accordingly, one of ordinary skill in the art who was presented with Clapp would certainly not be taught, as the Examiner suggests, to use sawdust in a papermaking slurry in order to ensure good formation on a cylindrical papermaking mold.

Regarding McCowan, the Examiner alleges generally that McCowan "discloses that *paper* made using sawdust that has been screened to a particle size of greater than about 1/16 inch (about 1590 μm) has *good strength properties*." Examiner's Answer, page 13, section 10. Emphasis added. Thus, the Examiner concludes that one of skill in the art faced with the problem of making strong paperboard would read McCowan and conclude that sawdust screened to a particle size greater than about 1/16 inches (about 1590 μm) would be sufficient for this purpose. Applicants respectfully disagree. As described in greater detail in Applicants' Appeal Brief at pages 8-10, McCowan is concerned with the problem of digesting sawdust to extract cellulose fibers of a sufficiently long length to produce tissue or writing paper having an acceptable total strength factor (TSF). McCowan is completely silent as to the sawdust particle size or length of cellulose fibers that would be necessary to produce *paperboard* having an acceptable TSF. When discussing the manufacture of tissue and writing paper, McCowan states that a sawdust particle "that will pass though a number 12 screen, e.g., about 1/16 of an inch, has no perceived TSF value" and that particles "up to a number 3 screen size [i.e., ¼ inch or 6350 μm] has (sic) a substantial TSF value." McCowan, column 4, lines 50-56. Although suggesting that particles up to 6360 μm may have a sufficient TSF for making *tissue or writing paper*, McCowan does not teach or suggest that such a "substantial TSF" would be sufficient for making a stronger *paperboard* product. Accordingly, McCowan certainly does not teach or

suggest that an undisclosed sawdust particle size below 6350 μm would be sufficient to produce *paperboard* having good strength properties.

In view of the remarks above, Applicants respectfully submit that the Examiner's conclusion that one of skill in the art would be led to adopt a sawdust particle size within the claimed range when making paperboard is clearly erroneous and not supported by the disclosures of Clapp or McCowan. Notwithstanding the above deficiencies of Clapp and McCowan, the Examiner's Answer also does not offer any prior art reference, or combination of references, that disclose, teach, or suggest using a concentration of sawdust in the manufacture of paperboard "wherein at least *95 percent of the sawdust by weight* has a particle size greater than 350 micrometers and less than 3175 micrometers" as recited in independent Claims 1, 5, 15, and 19. Accordingly, Applicants respectfully submit that the Examiner has not identified each and every element of Claims 1, 5, 15, and 19 in a single prior art reference, or a combination thereof, and, thus, has not satisfied his burden of establishing a *prima facie* case of obviousness.

CONCLUSION

Based on the foregoing remarks and those in the Appeal Brief previously filed, Applicant respectively submits that the rejections of independent Claims 1, 5, 15 and 19 are improper and should be reversed.

Respectfully submitted,

Brian C. Ellsworth
Registration No. 50,813

CUSTOMER NO. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Charlotte Office (704) 444-1000
Fax Charlotte Office (704) 444-1111